UTILIZATION OF THE TRAMPOLINE IN SELECTED SECONDARY SCHOOLS OF IOWA

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by

Earle W. Duggan

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Approved by Committee:

Neal Trembley
Chairman

Dean of the School of Graduate Studies

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CHAPTER I

INTRODUCTION

Historical background of trampoline. According to Griswold, the trampoline is undeniably a newcomer to physical education. It did not, however, spring into being over night, but is the end result of evolution, rather than invention. It is the product of a process of development which covers a period of centuries. Trampoline had its beginnings in one of man's oldest and most universal desires, viz., the timeless and inherent urge to overcome gravity.[1]

Acrobats, tumblers, court jesters, and popular entertainers, since the dawn of history, have made a source of livelihood from performing on the trampoline. Their appeal to their audiences was based largely upon their ability to defeat, if only for a moment, this force which holds men earth-bound.

These early entertainers realized how appealing their feats were to their spectators. Therefore, at an early date, they set about to devise and perfect various types of apparatus which would enable them to perform more spectacular feats. They needed apparatus which would give them added lift and spring, thus allowing them to overcome

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[1] Larry Griswold, Trampoline Tumbling (New York: A. S. Barnes and Company, 1966), p. 8.

gravity with greater ease and for longer periods of time.

One of the first pieces of apparatus devised for this purpose was the springboard, which allowed the performers to leap higher with less effort. Consequently, they were able to perform skills of much greater difficulty. Another piece of apparatus which saw considerable use was called the 'leaps' and consisted of a flexible plank, supported sufficiently clear of the ground by blocks at either end. This device enabled the performer to execute a succession of varied acrobatic feats, landing on and rebounding from the resilient plank. However, both the springboard and the 'leaps' had obvious disadvantage which limited and restricted their use.[1]

Constantly seeking to improve upon these early devices, many acrobats and tumblers continued to experiment with various types of springboards, catapults, and safety nets.

No substantiating evidence exists that there was such a man, but some think that the inventor of the bounding bed apparatus was Du Trampoline[2] who was said to be a French circus acrobat of the Middle Ages. He visualized the possibility of doing tumbling stunts on the safety net which was suspended under the flying trapeze acts. He experimented with crude systems of spring suspension, reduced the

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[1] Ibid.

[2] Ibid., p. 9.

size of the net for practicability, and then performed on it with a unique repertoire of flips, twists and turns. The net was gradually reduced to approximately the size used today in the circus.

For many years the use of the trampoline was confined to professional circles, there being little recognition of its potentialities with regard to physical education. From Europe some of the most outstanding acts migrated to this country where they joined a circus. In this way American academies were introduced to the art of trampolining. Griswold maintains that some of these performers were conscientious teachers, as well as expert performers, engendering an enthusiasm for the new activity among amateur tumblers and gymnastics instructors, and influencing many coaches of diving and tumbling to include trampoline tumbling in their program as early as 1926.[1]

Many Y.M.C.A. directors, physical education teachers and gymnastics coaches adopted the main idea of bounding bed construction and built them for their gymnasiums and camps.[2]

In 1939, after several years of research and development, the Nissen Trampoline was patented and manufactured on a mass production basis. The term trampoline actually was a

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[1] Ibid., p. 19.

[2] Newton Loken, Trampolining (Ann Arbor, Michigan: Braun Brumfield, Inc., 1955), p. 2.

registered trademark belonging to the Nissen Trampoline Company of Cedar Rapids, Iowa. A word similar to it had been used around circuses for many years. This had come down from the Italian word, 'trampoli', which means 'walking or performing on stilts'.[1]

The word trampoline is defined by Webster as a canvas sheet supported by springs and a metal frame used as a springboard in tumbling and exercise.[2]

In German, the word trampolin refers to a springboard or juggling. It comes from the word tremble, or the Latin stem of our words meaning to vibrate.[3]

The Spanish have a word trampolin, which translated means diving board. In 1936 when Nissen first started building these 'Bouncy Beds', he chose the word trampoline as a combination of these early circus words with the Spanish word trampolin, and applied it to his apparatus.[4]

Physical educators observed the physical benefits which trampolining produced. When they watched the great enthusiasm generated through participation by a person on

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[1] Frank LaDue and Jim Norman, Two Seconds of Freedom (Cedar Rapids, Iowa: Nissen Corporation, 1954), p. 4.

[2] Noah Webster, Webster's New International Dictionary, Third Edition, Unabridged (Cambridge, Massachusetts: G & C. Merriam Company, 1961).

[3] Loken, op. cit., p. 1.

[4] LaDue, op. cit., p. 5.

the trampoline, they introduced the activity into scholastic circles. During World War II, the trampoline received great impetus through its use in the preflight schools and air bases of the United States.

The trampolines, when they were first brought to the physical education scene, were very heavily constructed and difficult to move. The beds were made of solid canvas, giving little lift to the performer. Through the competitive efforts of the trampoline manufacturers of the United States, the trampolines have been developed into a fine piece of gymnastic apparatus. Currently, these trampolines are available in many sizes, are equipped with lightweight basket weave nylon beds, which provide great lift to the performers. The trampolines may have a suspension of either a spring or a cable system. The rubber cables give a softer landing, but are short-lived. The springs give a harder landing but have a longer life span.

Most trampolines in the schools of today are covered with a protective pad over the perimeter framing. Therefore, the trampoline, as we know it today, is exceedingly strong, durable, easy to store and mechanically safe.

Modern equipment and more proficient teachers are enabling the physical education student to enjoy the many benefits derived from participating in trampolining.

I. THE PROBLEM

The unit of trampoline in a physical education program has been subject to much controversy. School administrators and teachers are apprehensive about teaching trampoline in physical education. Some reasons for this apprehension are: (1) the misconception of the amount of danger involved, (2) the misconception of the frequency of accidents involved in the use of the trampoline, (3) the lack of instructors with an adequate teaching background of the trampoline, (4) the increase in school insurance by some insurance companies when trampoline is included in the curriculum, and (5) the administrators' personal fear of potential injuries due to student participation on gymnastic apparatus. Decisions on controversial subjects are often made on the basis of prejudice and emotion, with or without factual information or knowledge of alternatives.[1]

Statement of the problem. It was the purpose of this study to investigate the utilization of the trampoline in selected secondary schools in Iowa and to determine the conditions under which the activity of trampolining is presented to the Iowa high school physical education student.

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[1]Betty Hartman and Marion Alice Sanborn, Issues in Physical Education (Philadelphia: Lea and Febriger, 1964), p. 5.

This study involved (1) the teaching background of the trampoline instructors, (2) the type of equipment used in presenting trampoline, (3) the number of injuries recorded and the causes for them (4) the general opinion of a unit of trampoline and (5) the major benefits the trampoline has to offer the physical education student. The intent was to secure pertinent data needed to inform teachers and school administrators of the merits of the utilization of the trampoline in the physical education program for secondary schools.

Importance of the study. This study will be of significance to the physical education teachers in the secondary schools in Iowa concerned with the conditions and factors which are important in the safety, and the physical and social values, and the basic skills presented in the teaching of trampoline. This study may assist other teachers and school administrators who have doubts about the safety and the physical and social values of the teaching of trampoline.

Limitation of the study. This study was limited to thirty selected Iowa secondary schools with an enrollment of over five hundred, which offered a unit of trampoline in their curricoulum. The conditions and factors compiled were based upon the reliability of the physical education instructors who returned the questionnaires.

II. PROCEDURE

A review of the literature concerning the utilization of the trampoline in physical education programs was made. This literature included materials concerning the general philosophy of the teaching of trampolining in the physical education program, historical background of the trampoline, the amount of injuries which occurred while teaching a unit on trampoline and the major benefits received by the students when they were exposed to the basic skills of trampoline.

A questionnaire was developed, using the information from the experience and knowledge of the investigator. The questionnaire was validated by a response from ten secondary physical education teachers out of twelve selected secondary schools in Iowa with an enrollment of 499 or less who teach trampoline in their physical education program.

A letter of transmittal and the questionnaire were sent to teachers in thirty selected Iowa secondary schools with an enrollment of 500 or more who teach trampoline in their physical education program. A follow-up letter was sent to the teachers of five of these schools. Questionnaires were received from twenty-nine of the secondary teachers for a total of 96.7 per cent.

The questionnaire was sent out in the spring of 1971. The data for this study were secured from the information obtained from the questionnaires.

CHAPTER II

REVIEW OF SIGNIFICANT LITERATURE

In this chapter a review of the literature is presented relating to the activity, trampolining. A study of this literature revealed there were two main areas of trampolining: (1) the aspect of competitive trampolining, which includes a philosophy of coaching, building routines, and the mechanical analysis of performing skills; (2) trampolining as part of the curriculum of a physical education program which includes the safety aspects of trampolining, the physical and social values derived from the participation in trampolining, and the teaching of the basic skills performed on the trampoline. This study will cover the presentation of the activity, trampolining, for a physical education class as a part of its curriculum.

The safety aspect of trampolining in the physical education class. Scott believes that most students have the same casual manner of ignoring the possibility of danger on a trampoline that they show at all other times. But students can be taught proper safety practices and taught to adhere to safety precautions, just as is done in many other

phases of a physical education program.[1]

McCloy feels that one precaution needs to be constantly kept in mind, that of safety. This does not mean that the trampoline is dangerous. If it is properly used, it is not dangerous. But any piece of gymnasium apparatus is potentially dangerous if improperly used or supervised, and this applies to the trampoline as well. Always, even if the performer is expert, someone should stand ready at each end of the trampoline to 'protect' in case of a bit of carelessness. Learners should never attempt to make too rapid progress, undertaking the more difficult stunts before the fundamentals have been thoroughly learned.[2]

According to Holzaepfel, the trampoline is an inanimate piece of equipment unable to injure anyone or anything. The unintelligent or uninformed misuse by an individual or individuals causes the criticism. This activity requires supervision by an attentive and well-trained physical education instructor.[3]

Piscopo, a strong proponent of trampoline training in

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[1] M. Gladys Scott, Journal of the American Association for Health, Physical Education and Recreation, XXIII (June, 1952), 10.

[2] C. H. McCloy, Trampoline Tumbling (St. Louis, Missouri: Business Collaborators, Inc., 1948), Foreword, p. 7.

[3] Dick Holzaepfel, "Elementary Trampoline Stunts," The Athletic Journal, XXXIII (October, 1952), 11.

the schools, contends there is the potential for accidents. Accidents will occur on the trampoline; to expect 100 per cent accident-free use would be unrealistic. But the potential hazard in the use of the trampoline represents no greater threat to safety of students than football, basketball, or soccer, when performed in a professional manner in an educational setting.[1]

With proper supervision, trampolining can be a worthwhile activity in school physical education classes, according to Burnette. But it should be taught only in a situation where there is adequate supervision and spotting, and children should be separated according to their ability. For poorly coordinated youngsters, there should be individual instruction.[2]

Clarke warns that the trampoline should not be used for unsupervised recreation.[3]

Drury and Schmid feel the trampoline should always be supervised by a well-trained, competent instructor. It should be kept locked, except when supervised.[4]

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[1] John Piscopo, "Clues To Safety on the Trampoline," Journal of the American Association for Health, Physical Education and Recreation, XXXVII (April, 1966), 51-52.

[2] William E. Burnette, "The Trampoline: Fitness Boon or Safety Hazard," Today's Health, (May, 1969), 32.

[3] Ibid., p. 33.

[4] Blanche Drury and Andrea Schmid, Gymnastics For Women (Palo Alto, California: The National Press, 1965), p. 157.

The way Vincent feels, the trampoline presents no more safety problems than any other gymnastics event. Beginning trampoline is probably one of the most safe events. There are so many simple, safe skills that can be learned on the trampoline that one could teach for an entire semester before even introducing a complete somersault to the class. He thinks students should not bounce without spotters, and spotters must pay attention to their performer.[1]

LaDue and Norman both think that only through trampoline misuse will accidents occur. They believe the teacher is responsible for every student in the class, his learning and his safety. Every accident in the gymnasium is the result of the teacher's negligence. The teacher's gymnasium is the teacher's responsibility.[2]

According to Hennessy, safety is a relative thing and must be incorporated in, and made a part of every day workouts. It must be a part of the every day teaching and coaching procedure. He feels if rules are made, they must be enforced, for if they are not enforced, they will be broken. To prevent this, one must take the attitude that

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[1] William Vincent, "Let's Teach Routines-Trampoline," The Modern Gymnast (California: Sundby Publications, January, 1968), p. 20.

[2] Frank LaDue and Jim Norman, Two Seconds of Freedom (Cedar Rapids, Iowa: Nissen Corporation, 1962), p. 13.

the teaching of safety must be built into the teaching techniques themselves. It should not be set aside to be read as a reminder of what not to do.[1]

For both safety and success Keeney argues that the most important rules are those which deal with systematic step-by-step learning, with emphasis on quality. It should be a source of incentive and of reassurance to know that if the learning procedure is sound, the learning process will be safe.[2]

Griswold's interpretation of safety revolves around the teaching of fundamentals. He strongly recommends that the first few periods of instruction embrace nothing beyond the discussion and demonstration of fundamental body mechanics and practice in the execution of the seven fundamental bounces, singly and in combinations. Griswold has felt for many years that supervision is the keystone of safety. Unless properly supervised, the novice all too often tends to skip important steps in progression, that is, attempts exercises for which he is unprepared, which may result in unnecessary physical punishment. The student must be strongly cautioned against such procedure, and thoroughly

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[1]Jess Hennessy, The Trampoline As I See It (Huntsville, Texas: Worldwide Publications, 1967), p. 5.

[2]Charles J. Keeney, Trampolining, Illustrated (New York: The Ronald Press Company, 1961), p. 6.

familiarized with rules and regulations designed to prevent injury. He should be made to realize the importance of 'touching all the bases.'[1]

It is Piscopo's belief that the element of injury sharply increases when somersault turns are introduced. Forward and back somersaults are not fundamental stunts, but should be reserved for the skilled or competitive performer seeking specific coaching. For a physical education performer the desired outcomes of leg strength, agility, coordination and balance can be developed through fundamental routines, excluding full transverse rotary or flip actions.[2]

Loken feels instructors should remember that the dangerous element in trampolining is the illusion of foolproofness that is created by the soft springy bed. Students may easily get the feeling that they cannot get hurt. This can lead to taking unnecessary chances and result in injury, and showing off can be dangerous. If, however, trampoline activities are closely supervised, these stunts can be learned with little or no danger.[3]

According to Loken, good equipment, properly main-

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[1]Larry Griswold, Trampoline Tumbling Today (New York: A. S. Barnes and Company, 1962), p. 25.

[2]Piscopo, op. cit., p. 52.

[3]Newton Loken, Trampoline Instructor's Guide (Chicago: The Athletic Institute), p. 7.

tained, is basic to all other safety precautions.[1]

The success of the gymnastics and trampoline program as a part of the physical education program Benson thinks is primarily based upon the proper teaching of gymnastics skills, and the skillful application of spotting methods and techniques.[2]

Sorenson contends trampolining is an activity that requires good judgment just as driving an automobile requires good judgment. While learning to perform on the trampoline one needs a good supervisor in order to acquire good trampoline judgment just as a good student driver needs a competent supervisor to help him acquire the good judgment necessary to become a safe driver.[3]

To summarize the safety aspect of trampolining, this investigator has used Hennessy's list of safety regulations because it covers the most common rules of trampolining. If these rules are not obeyed by the performer or enforced by the physical education instructor, the trampoline could eventually be eliminated from the physical education curric-

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[1]Newton Loken and Robert J. Willoughby, Complete Book of Gymnastics (New Jersey: Prentice-Hall, Inc., 1961), p. 63.

[2]Jack Benson, "Spotting as a Safety Factor in Gymnastics," The Magic of Gymnastics (Washington, D. C.: AAHPER, 1969), p. 38.

[3]Bill Sorenson, "Is Trampoline Safe?," The Magic of Gymnastics (Washington, D. C.: AAHPER, 1969), p. 102.

ulum.

Safety regulations.

1. The trampoline should never be left unsupervised.
2. The trampoline should be kept locked when not in use.
3. Street shoes should not be worn on the trampoline.
4. Safety pads on the frame of the trampoline should be provided.
5. Only a trampoline in good condition should ever be used.
6. There should be an adequate number of trained spotters.
7. Proper spotting equipment should be used when needed.
8. While spotting, the spotter should never rest the hands and arms on the suspension system as an arm may be broken should the performer on the trampoline fall.
9. The spotter should be alert while spotting, watching the student who is jumping.
10. The student should learn means of preventing unnecessary minor injuries. He should learn what not to do as well as what to do.
11. A performer should make a habit of always climbing up and down the trampoline.
12. To prevent loss of control, the performer should bounce for short periods of time only.
13. The student should know his limitations but should have confidence.
14. The student should never attempt skills when he is fatigued.
15. The student should never engage in indiscriminate bouncing.
16. The student should never stagger backward to regain his balance. He should sit down so that he will not stagger off the end of the trampoline.
17. Never should more than one student be on the trampoline at one time.
18. Proper learning progression should be closely followed.
19. Horse play should not be tolerated.[1]

The physical and social values of trampolining to the

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[1]Jeff Hennessy, Trampolining (Dubuque, Iowa: Wm. C. Brown Company, 1968), pp. 9-10.

physical education student. Kostick thinks the trampoline has great benefit to the student of physical education. He believes it increases cardiovascular conditioning as the heart and lungs work harder. In addition to this, trampolinists improve their balance, coordination, and body control.[1]

According to Holzaepfel, the main values derived from making trampoline an important part of a physical education program are: (1) the physical conditioning from prolonged periods of trampolining is tremendous, (2) there is an orientation of time and space involved in trampolining, (3) the neuro-muscular coordination involved makes for a better timed and more rhythmical or coordinated individual, and (4) students in general physical education classes enjoy the mental exercise in performing one stunt while thinking of the next stunt.[2]

Harris contends rebound tumbling is of value to the physical education program because it adds fun, variety, and interest to boys, and girls. Learning is fast and enjoyable and it requires no particular skill to meet success; therefore, more students are willing to participate in rebound

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[1]Andy Kostick, "The Trampoline: Fitness Boon or Safety Hazard," Today's Health, (May, 1969), 34.

[2]Dick Holzaepfel, "Elementary Trampoline Stunts," The Athletic Journal, XXXIII (October, 1952), 11.

tumbling than in any other activity.[1]

The philosophy of McCloy is that the trampoline is more than just another device for increasing the fun element in the physical education class. It is a splendid conditioner, and, in addition to this, it is one of our best pieces of apparatus for motor education. McCloy maintains that on the trampoline, one learns more about spatial adaptation, quick reactions to emergencies of balance, and fine motor timing than on any other gymnastic device with which he is acquainted.[2]

Scott indicates that rebound tumbling can be used to teach concentration on the kinesthetic feelings of many different movements.[3]

In McCants' opinion, the kinesthetic value has important implications for teaching children with low levels of neuro-muscular coordination. His study demonstrated that general motor performance can be improved among mentally retarded children through trampoline activities.[4]

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[1]Rich Harris, Physical Education and Rebound Tumbling (Cedar Rapids, Iowa: Nissen Corporation, 1961), p. 4.

[2]C. H. McCloy, Trampoline Tumbling Today (New York: A. S. Barnes Company, 1962), p. 13.

[3]M. Gladys Scott, Analysis of Human Motion (New York: Appleton-Century-Crofts, 1963), p. 341.

[4]Robert G. McCants, "The Effects of a Selected Trampoline Program on the General Motor Performance of a Group of Mentally Retarded Children" (unpublished Master's thesis, University of Maryland, College Park, Maryland, 1962).

Another value the trampoline has to offer the student is expressed by Vincent. Rebound tumbling, as trampolining is sometimes called, offers a unique opportunity to combine skills into simple routines since the strength factor is reduced and the skills lend themselves naturally to continuation of movement.[1]

Hennessy sees the value of the trampoline in a different light. He feels that coaches in various sports have come to see the value of the trampoline in their particular field as a means of conditioning, physical development and the sharpening of one's ability to handle his body in terms of balance, agility and relocation.[2]

Cole agrees with Hennessy that this 'new look' in competitive diving can be attributed in part to the improvement in the springing qualities of our diving boards. However, much more credit belongs to a relatively new type of training activity called rebound tumbling. With the development of safety devices and spotting methods, rebound tumbling has provided divers with a means of improving and learning diving techniques and skills with little chance of

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[1]William Vincent, "The Trampoline: Fitness Boon or Safety Hazard?," Today's Health, (May, 1969), 34.

[2]Jeff Hennessy, The Trampoline As I See It, Second Edition (Louisiana: International Publication, 1969), p. VII.

injury.[1]

Another value is indicated by LaDue and Norman. They believe that in learning skills on the trampoline one will develop a strict sense of mental discipline, and this mental control has a tremendous carry-over value in every day living.[2]

In Price's opinion, self discipline, a quality that at present supposedly is somewhat rare, most assuredly marks the successful gymnast and adds to total fitness.[3]

According to Millman, the physical educators of our country can study the problem by studying the sport. Perhaps the young will learn gymnastics not as 'thrills and spills' or just doing 'tricks,' but doing something well, with form and style, and with grace and pride.[4]

Wortman thinks that for the physical education class gymnastics provides the participant with movement experiences which can be found in few other activities. It increases his ability to relocate after rotations, his range

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[1]Edward Cole, Diving and Rebound Tumbling (Cedar Rapids, Iowa: Barnes Publishing Company, Inc., 1960), p. 1.

[2]Frank LaDue and Jim Norman, Two Seconds of Freedom (Cedar Rapids, Iowa: Nissen Corporation, 1962), p. 17.

[3]Hartley Price, "The Unique Contributions of Gymnastics To Physical Education and Athletics," The Magic of Gymnastics (Washington, D. C.: 1969), p. 27.

[4]Dan Millman, "The Art of Gymnastics," The Magic of Gymnastics (Washington, D. C.: 1969), p. 83.

of movement, his neuro-muscular coordination, and his movement mechanics.[1]

In Faria's opinion, the teaching structure of gymnastics is teaching the student how to learn. Learning how to learn brings the student closer to the subject matter, the consequences being total involvement and excitement about that which is new.[2] This supports Piaget's work of the development of the individual as "a plea that children be allowed to do their own learning."[3]

It is Loken's belief that the trampoline, along with tumbling, excells among gymnastic activities in developing the legs.[4]

Szypula contends that trampolining is a valuable activity in comprehensive modern physical education and competitive programs in schools, colleges, and clubs. The competition may consist of competing with others or self-testing.[5]

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[1]W. P. Wortman, "The Role of Gymnastics in the Secondary School Curriculum," The Magic of Gymnastics, p. 95.

[2]Irvin E. Faria, "Psychological Basis of Teaching Methodology," The Magic of Gymnastics, p. 232.

[3]Charles A. Bucher and Myra Goldman, Dimensions of Physical Education (St. Louis: The C. V. Mosby Company, 1969), p. 38.

[4]Newton Loken, Complete Book of Gymnastics (New Jersey: Prentice Hall, Inc., 1959), p. 61.

[5]George Szypula, Beginning Trampolining (California: Wadsworth Publishing Company, Inc., 1968), p. 1.

In summarizing the values of the trampoline both for the teacher and the student, Sanders expresses his idea that teaching the fundamentals of trampoline, at almost any age level, accomplishes four major goals. He is speaking of the development of a kinesthetic sense, cardio-vascular fitness, large muscle exercise, and lastly, a certain psychological advancement in the individual. Many activities taught in today's physical education programs can contribute to these mentioned areas, but few, if any, can develop all of these areas as efficiently as the trampoline.[1]

The basic fundamentals of trampolining. This investigator has selected the basic fundamentals of trampolining from six of the present best-known authorities on trampolining. The investigator cannot agree or disagree with any of the basic fundamentals, based on proper sequence of learning the basic skills of trampolining. It is doubtful there is one best method of sequence. However, from the standpoint of personal experience, the investigator would tend to keep the average or beginning physical education participant from being exposed to dive actions. It seems to the investigator that Loken or Keeney may be advocating the best and safest method of presentation.

The six selected examples of the fundamental skills

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[1] Fred B. Sanders, Jr., "The Trampoline Event," The Magic of Gymnastics, p. 123.

of trampolining are found in Appendix B.

Bucher feels the role that we as physical educators play in the skill education of boys and girls is probably our most important responsibility. He maintains that we as coaches and physical educators should be proud to be the teachers and the nurtures of skill.[1]

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[1]Charles A. Bucher and Myra Goldman, Dimensions of Physical Education (St. Louis: The C. V. Mosby Company, 1969), p. 227.

CHAPTER III

PRESENTATION AND ANALYSIS OF DATA

A questionnaire was used to obtain the data for this study. The data sought from the questionnaire were based on material found in the review of the literature and on the investigator's experience of teaching trampoline.

A questionnaire was sent to the physical education teachers in thirty selected Iowa secondary schools with an enrollment of five hundred or more students who teach trampoline in their physical education classes. Responses were received from twenty-nine secondary physical education teachers for a 96.7 per cent return of the total selected sample. The responses were tabulated and an analysis was made from the responses received. In this chapter the data will be reported.

Professional preparation for teaching trampolining. Table I indicates that twenty-eight or 96.5 per cent of the respondents' college major was in physical education. Seventeen, or 58.6 per cent, of the respondents had received a trampoline or gymnastics course in college.

The four respondents who reported other sources of professional preparation include "from high school physical education classes," "through a student teacher from Iowa State University," "from extensive Turner training," and

TABLE I

PROFESSIONAL PREPARATION FOR TEACHING TRAMPOLINING REPORTED BY TWENTY-NINE PHYSICAL EDUCATION TEACHERS IN SELECTED IOWA SECONDARY SCHOOLS

Professional Preparation	Number of Teachers (N:29)*	Per Cent of Teachers
Past gymnastics performer	3	10.3
Gymnastics or trampoline course in college	17	58.6
Attendance at clinics	13	44.8
Self-taught	13	44.8
College major in physical education	28	96.5
Other	4	13.8

*This figure totals more than twenty-nine due to multiple responses.

"from experienced gymnasts."

The data in Table II show the respondents averaged six and one-half years of teaching experience in the area of trampolining. One respondent has taught trampolining for twenty years.

Table III indicates that all respondents have included trampoline instruction in their school programs for more than one year.

TABLE II

NUMBER OF YEARS OF TEACHING EXPERIENCE REPORTED BY TWENTY-NINE PHYSICAL EDUCATION TEACHERS IN SELECTED IOWA SECONDARY SCHOOLS

Number of Years	Number of Teachers	Per Cent of Teachers
1 year	3	10.3
2-5 years	7	24.1
6-10 years	13	44.8
More than 10 years	6	20.7

TABLE III

NUMBER OF YEARS TRAMPOLINE INSTRUCTION HAS BEEN INCLUDED IN THE SCHOOL PROGRAM OF TWENTY-NINE SELECTED IOWA SECONDARY SCHOOLS

Number of Years	Number of Teachers	Per Cent of Teachers
1 year	0	0
2-5 years	12	41.4
6-10 years	12	41.4
More than 10 years	5	17.2

Table IV shows that the majority of respondents teach trampolining for more than ten days. Three teachers presented trampoline "as long as students were interested," "almost daily," and "once a week."

TABLE IV

NUMBER OF DAYS TRAMPOLINING WAS PRESENTED BY TWENTY-NINE TEACHERS IN SELECTED IOWA SECONDARY SCHOOLS

Number of Days	Number of Teachers	Per Cent of Teachers
5 days	2	6.9
6-10 days	5	17.2
11-15 days	10	34.5
More than 15 days	12	41.4

The data reported in Table V indicate that trampoline is presented most frequently in conjunction with a unit of gymnastics. One respondent has trampoline "available to anyone in an open gymnasium." Another respondent presents trampoline to "interested students once a week."

TABLE V

METHOD OF PRESENTING TRAMPOLINE BY TWENTY-NINE PHYSICAL EDUCATION TEACHERS IN SELECTED IOWA SECONDARY SCHOOLS

Method of Presentation	Number of Teachers (N:29)*	Per Cent of Teachers
As one of several stations within a class period	15	51.7
In conjunction with a unit of gymnastics	19	65.5
As an individual activity	6	20.7
Other	2	6.9

*This figure totals more than twenty-nine due to multiple responses.

Trampoline is presented most frequently in the winter as indicated in Table VI. Eight of the respondents start a unit of trampoline in the winter and continue to teach it as a spring activity.

TABLE VI

THE SEASON THAT TRAMPOLINE WAS PRESENTED BY TWENTY-NINE TEACHERS IN SELECTED IOWA SECONDARY SCHOOLS

Season Trampoline is Presented	Number of Teachers (N:29)*	Per Cent of Teachers
Fall	6	20.7
Winter	22	75.9
Spring	9	31.0

*This figure totals more than twenty-nine due to multiple responses.

Table VII indicates that the squad method of grouping was used most frequently for teaching trampoline. One respondent had "girls' classes which were grouped according to swimmers' level, i.e., three different levels." Another teacher "grouped the students by choice of the student."

Teaching on a coeducational basis. Twenty-one, or 72.4 per cent, of the respondents did not teach trampoline on a coeducational basis. Eight, or 27.6 per cent, of the respondents did teach trampoline on a coeducational basis.

TABLE VII

METHOD OF GROUPING THE TRAMPOLINE BY TWENTY-NINE PHYSICAL EDUCATION TEACHERS IN SELECTED IOWA SECONDARY SCHOOLS

Method of Grouping	Number of Teachers (N:29)*	Per Cent of Teachers
Squad	22	75.9
Homogeneously by ability	3	10.3
Heterogeneously by ability	5	17.2
Other	2	6.9

*This figure totals more than twenty-nine due to multiple responses.

Teachers use spotters for trampoline safety. All twenty-nine, or one hundred per cent, of the respondents indicated they use "spotters" while they have trampoline practice. Each respondent reported he used spotters on all sides of the trampoline.

Placing of mats surrounding the trampoline. Twenty-three, or 79.3 per cent, of the respondents place mats on the gymnasium floor, surrounding the trampoline. Six, or 20.7 per cent, of the teachers reported that they do not place mats around the trampoline.

Number of persons performing on the trampoline simultaneously. Eighteen, or 62.1 per cent, of the teachers

never allow more than one person on the trampoline simultaneously. Nine, or 31.0 per cent, occasionally allow more than one person on the trampoline at one time. Two, or 6.9 per cent, often allow more than one on the trampoline.

Trampoline demonstrations. Table VIII reveals that fifteen, or 51.7 per cent, do not demonstrate the activity of trampoline.

TABLE VIII

TRAMPOLINE DEMONSTRATIONS BY TWENTY-NINE PHYSICAL EDUCATION TEACHERS IN SELECTED IOWA SECONDARY SCHOOLS

Trampoline Demonstration	Number of Teachers (N:29)*	Per Cent of Teachers
Half-time performances at basketball games	5	17.2
Parent Teacher Association	5	17.2
Assemblies	8	27.6
Gymnastic meets	3	10.3
Open House	1	3.4
None	15	51.7

*This figure totals more than twenty-nine due to multiple responses.

The data in Table IX show that the safety belt and hand spotting are the most frequently used training aids for the difficult skills on the trampoline. Nine, or 31.0 per

cent, used all three training aids: (1) the safety belt, (2) hand spotting, and (3) the overhead spotting rig. Four, or 13.8 per cent, used the safety belt and hand spotting. One teacher has the students practice on the floor with a reuther board. One respondent does not use training aids because he does not teach the more difficult skills.

TABLE IX

TRAINING AIDS USED FOR DIFFICULT SKILLS BY TWENTY-NINE PHYSICAL EDUCATION TEACHERS IN SELECTED IOWA SECONDARY SCHOOLS

Training Aids	Number of Teachers (N:29)*	Per Cent of Teachers
Safety belt	18	62.1
Hand spotting	18	62.1
Overhead spotting rig	7	24.1
None	4	13.8
Other	2	6.9

*This figure totals more than twenty-nine due to multiple responses.

Table X reveals that the visual aids most frequently used to aid in the instruction of trampolining are bulletin board charts and demonstrations.

The data in Table XI indicate that socks are the most frequently used footwear by students while they are perform-

TABLE X

VISUAL AIDS USED TO AID IN THE INSTRUCTION BY TWENTY-NINE PHYSICAL EDUCATION TEACHERS IN SELECTED IOWA SECONDARY SCHOOLS

Visual Aids Used to Aid Instruction	Number of Teachers (N:29)*	Per Cent of Teachers
Films	7	24.1
Film strips	2	6.9
Loop films	1	3.4
Video tape	3	10.3
Bulletin board charts	20	69.0
Demonstrations	20	69.0
None	2	6.9

*This figure totals more than twenty-nine due to multiple responses.

ing on the trampoline. Wearing some type of footwear seems to be more sanitary. Some trampolinists wear a sock made of terry cloth, which is washable, and is usually referred to as a tennis sock.

Number of trampolines available in schools reporting. Ten, or 34.5 per cent of the respondents, have one trampoline in their schools. Eighteen, or 62.1 per cent, have two trampolines. One respondent reports having three trampolines. Two teachers have mini-tramps in their schools.

TABLE XI

FOOTWEAR RECOMMENDED BY TWENTY-NINE PHYSICAL EDUCATION TEACHERS IN SELECTED IOWA SECONDARY SCHOOLS

Footwear Used	Number of Teachers (N:29)*	Per Cent of Teachers
Gym shoes	0	0
Bare feet	13	44.8
Socks	23	79.3
Gymnastic footwear	10	34.5
Other	0	0

*This figure totals more than twenty-nine due to multiple responses.

Size of the jumping surface of the trampoline. The six feet by twelve feet size jumping surface of the trampoline is the most frequently used by teachers according to the data reported in Table XII.

Table XIII indicates that the web bed is most frequently used for physical education classes.

Type of suspension used on trampolines. Springs were the most frequently used suspension on trampolines by the physical education teachers for their classes. Ten, or 34.5 per cent of the respondents, use rubber cables. Twenty-three, or 79.3 per cent, use springs for suspension on their trampolines.

TABLE XII

SIZE OF THE JUMPING SURFACE OF THE TRAMPOLINE USED BY PHYSICAL EDUCATION TEACHERS IN SELECTED IOWA SECONDARY SCHOOLS

Size of Jumping Surface	Number of Teachers (N:29)*	Per Cent of Teachers
Five feet by ten feet	6	20.7
Six feet by twelve feet	19	65.5
Seven feet by fourteen feet	7	24.1
One foot by one foot, i.e., mini-tramp	2	6.9

*This figure totals more than twenty-nine due to multiple responses.

TABLE XIII

TRAMPOLINE BED USED FOR PHYSICAL EDUCATION CLASSES BY TWENTY-NINE TEACHERS IN SELECTED IOWA SECONDARY SCHOOLS

Type of Trampoline Bed Used	Number of Teachers (N:29)*	Per Cent of Teachers
1 3/4 inch web	10	34.5
1 inch web	10	34.5
1/2 inch web	2	6.9
Solid cotton canvas	9	31.0
Perforated rubber	0	0
Solid nylon	4	13.4

*This figure totals more than twenty-nine due to multiple responses.

Safety pads. Twenty-five or 86 per cent of the respondents, use some kind of safety pads on their trampolines. Twenty-three, or 79.3 per cent, use the recommended method of padding the circumference of exposed steel on the trampoline.

Storage of the trampoline. None of the respondents leave the trampoline standing open when it is unsupervised as shown in Table XIV.

TABLE XIV

STORAGE OF THE TRAMPOLINE BY TWENTY-NINE PHYSICAL EDUCATION TEACHERS IN SELECTED IOWA SECONDARY SCHOOLS

Storage of Trampoline	Number of Teachers (N:29)*	Per Cent of Teachers
folded and locked	20	69.0
folded	7	24.1
stored in athletic equipment room	6	20.7
left standing open	0	0

*This figure totals more than twenty-nine due to multiple responses.

Table XV shows that most teachers record progressive skills on charts to inform the students of their progression.

TABLE XV

METHOD OF PROGRESSION ON THE TRAMPOLINE REPORTED BY TWENTY-NINE PHYSICAL EDUCATION TEACHERS IN SELECTED IOWA SECONDARY SCHOOLS

Method of Progression	Number of Teachers	Per Cent of Teachers
Pre-post skill test	6	20.7
Progressive skills recorded on charts	14	48.3
None	7	24.1
Other*	2	6.9

*Post-test only

*Subjective evaluation of skills at the beginning of unit. Evaluation of prepared routine at the end of unit.

Kind of games played on the trampoline. Eighteen, of 62.1 per cent of the respondents, do not have games of any kind on the trampoline. Fifteen, or 51.7 per cent, have the students play add-on games on the trampoline.

Types of injuries which occur on the trampoline. Table XVI reveals that the most frequently reported types of injury on the trampoline are mat abrasions. However, two respondents do not record minor injuries, i.e., mat abrasions, as they do not require medical attention. Mat abrasions occur very often in their programs. One fracture occurred when a student broke into the school and jumped on the trampoline.

TABLE XVI

TYPES OF INJURIES TO STUDENTS ON THE TRAMPOLINE REPORTED BY TWENTY-NINE PHYSICAL EDUCATION TEACHERS IN SELECTED IOWA SECONDARY SCHOOLS

Type of Injury	Number of injuries reported
Mat abrasion	Too numerous to definitely determine.
Sprain	7
Strain	6
Dislocation	2
Fracture	3
Paralysis	0
Death	0
Other*	2

*Nose bleed
*Re-injury of back

Most injuries required a short recovery period before physical education was resumed as shown in Table XVII.

The most frequent reasons for accidents. Teachers were asked to rank in order the most frequent reasons for accidents on the trampoline in their schools. Three of the respondents report they had no accidents. Two of the teachers state they had no accidents serious enough to rank the reasons. Three of the teachers failed to answer the question. One respondent reports that a loss of privilege

TABLE XVII

THE AVERAGE RECOVERY PERIOD REQUIRED BEFORE PHYSICAL EDUCATION WAS RESUMED AFTER AN INJURY AS REPORTED BY TWENTY-NINE TEACHERS IN SELECTED IOWA SECONDARY SCHOOLS

Average Recovery Period	Number of Teachers	Per Cent of Teachers
1-7 days	14	48.3
2 weeks	1	3.4
3 weeks	3	10.3
6 weeks	2	6.9
Other (no time lost)	9	31.0

rule was made which prohibits any student who has an injury on the trampoline from performing on the trampoline for the remainder of the year. This rule was put into effect because the physical education teachers discovered most of the injuries reported by the students was an effort to get out of some other class. Nineteen of the respondents ranked the most frequent reasons for accidents as follows: (1) attempting skills beyond the performer's capability, (2) while executing a skill, (3) inadequate supervision, (4) inadequate spotting, and (5) faulty equipment.

Skill being executed at the time of injury. Table XVIII reveals that front skills are the most frequently reported as the most dangerous skills attempted on the tram-

poline. One respondent reports that the majority of the students were not at the level of doing front or back somersaults, thus he has had no injuries.

TABLE XVIII

SKILL BEING EXECUTED AT THE TIME OF INJURY AS REPORTED BY TWENTY-NINE PHYSICAL EDUCATION TEACHERS IN SELECTED IOWA SECONDARY SCHOOLS

Skill being executed	Number of injuries	Per Cent of injuries
Back drop	4	9.3
Front drop	15	34.9
Front somersault	4	9.3
Back somersault	2	4.6
Folding or moving equipment	2	4.6
Acting as a spotter	4	9.3
Knee drops	10	23.2
Other*	2	4.6

*One slipped and fell.
*One attempted a one and one-quarter forward somersault.

Data reported in Table XIX indicate that twenty-six, or 89.6 per cent of the respondents, had over one hundred students participating on the trampoline in their physical education classes. One respondent reports having fourteen hundred students. Other respondents report "eight hundred," "seven hundred," "eleven hundred," and "one thousand."

TABLE XIX

NUMBER OF STUDENTS PARTICIPATING IN THE SCHOOL PROGRAM IN TWENTY-NINE SELECTED IOWA SECONDARY SCHOOLS DURING THE 1970-71 SCHOOL YEAR

Number of Students*	Number of Teachers	Per Cent of Teachers
25-50	1	3.4
51-100	2	6.9
101-200	16	55.2
More than 200	10	34.5

*A total of approximately eighty-four hundred students.

Table XX indicates that the majority of teachers have less than twenty students participating on the trampoline within a physical education class.

TABLE XX

NUMBER OF STUDENTS PARTICIPATING ON THE TRAMPOLINE IN PHYSICAL EDUCATION CLASSES IN TWENTY-NINE SELECTED IOWA SECONDARY SCHOOLS

Number of Students	Number of Teachers	Per Cent of Teachers
1-10	9	31.0
11-15	7	24.1
16-20	10	51.7
Other*	3	10.3

*Class number 42-55
More than twenty in two other schools.

General opinion of a trampoline unit of study. The general opinion is favorable that a trampoline unit of study should be included in the physical education curriculum. One respondent feels she has not taught trampoline long enough to make a bona fide evaluation. Another respondent would favor a trampoline unit if she had good standard equipment available. One respondent thinks that trampoline helps develop balance and coordination, but due to the dangers of this piece of equipment, and the supervision it requires, she does not go into difficult skills. One respondent maintains that the trampoline is in use all day in her high school, although only a brief introductory unit demonstrating simple skills is given for one week.

Twenty-seven, or 93.1 per cent of the respondents, favor a trampoline unit of study in physical education. Two or 6.9 per cent of the respondents, do not favor a trampoline unit of study in the physical education curriculum.

Major benefits the trampoline has to offer students. Physical education teachers were asked to list the major benefits which they feel the trampoline offers students. The benefits listed by the respondents may be found in Appendix C. Coordination was listed by fifteen of the teachers as a major benefit. Nine respondents feel balance is beneficial. Four of the respondents feel that diving and body control are improved by use of the trampoline.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to investigate the utilization of the trampoline in selected secondary schools in Iowa and to determine the conditions under which the activity, trampolining, is presented to the Iowa high school physical education student.

This study involved: (1) the teaching background of the trampoline instructors, (2) the type of equipment used in presenting trampoline, (3) the number of injuries recorded and the causes for them, (4) the general opinion of a unit of trampolining, and (5) the major benefits the trampoline has to offer the physical education student. Further, it was the purpose of this study to secure pertinent data needed to inform teachers and school administrators of the merits of the utilization of the trampoline in the physical education program for secondary schools.

Summary. This study was accomplished through a questionnaire sent to physical education teachers in thirty selected secondary schools in Iowa with an enrollment of five hundred or more. The questionnaire was validated by ten physical education teachers in selected Iowa secondary schools with an enrollment of four hundred, and ninety-nine or less. A total of twenty-nine replies were received for a

97 per cent return. The data from the questionnaire were reported in Chapter III.

A review of the literature was made to reveal the presentation of the activity, trampolining, for a physical education class as part of its curriculum.

Conclusions. After tabulating the results of this study, it is this investigator's conclusion that the physical education teachers in the twenty-nine selected Iowa secondary schools are professionally prepared to present a unit of trampolining to the high school physical education student.

All twenty-nine teachers seem to be aware of safety when they teach trampolining to the physical education students. They use spotters, safety pads around the frame of the trampoline, floor mats surrounding the trampoline, and training aids to prevent potential injuries. They take precautions when storing the trampoline by making it unavailable to the students. Most injuries appear to be minor injuries: thus very little physical education is lost due to injuries on the trampoline.

The majority of the teachers use some method of progression. They record progression, use visual aids and do demonstrations to create interest for the student.

Presenting a unit of trampolining to the high school students in the physical education classes is a very favor-

able, safe, enjoyable activity for the physical education teachers in twenty-nine selected Iowa secondary schools.

Recommendations. After a survey of the twenty-nine selected Iowa secondary schools, it is this writer's recommendation that:

1. All secondary schools should present a unit of trampolining to their students.
2. Teachers should familiarize themselves with proper progression and insist that students adhere to this sequence of learning.
3. Some form of students' progression should be recorded as a method of grading or student self-evaluation.
4. The trampoline should have: (a) safety pads covering the frame, (b) teacher supervision, (c) proper spotting, and (d) floor mats surrounding the trampoline when in use.
5. A trampoline should be folded and locked when not in use.
6. Administrators and teachers with a negative attitude should be informed at school conventions, in-service meetings, and orientation meetings of the physical and social values of a unit of trampolining in the physical education curriculum as well as the relative safeness of trampolining.

From the writer's experience, and from the results of this study, it is recommended that a competitive regulation type trampoline not be used for physical education classes. It is further recommended that teachers do not progress past the basic fundamental skills of trampolining within a physical education class, and do exclude all forward or backward ninety-one degree to three hundred and sixty degree lateral axis rotation, i.e., flip action skills.

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APPENDIXES

APPENDIX A

DEFINITION OF TERMS

Add on - Add on is a game played on the trampoline where each person must do what the preceding person did and then add on a skill.

Air mindedness - Air mindedness is an awareness of one's position with relation to the trampoline bed, or some other fixed object.

Arch out - Arch out is a position in which the body is bent backwards or hyper-extended.

Arm action - Arm action is the movement of the arms during performance.

Back drop - A back drop is landing on the back.

Back pullover - A back pullover is a three-quarter back somersault from back take-off to feet.

Beat - A beat is to be in rhythm with the movement of the trampoline bed.

Bed - A bed is usually a rectangular fibrous woven suspended area on which skills are performed.

Belly drop - A belly drop is landing on the stomach.

Belt - A belt refers to a safety or spotting belt.

Blind - A blind skill is one which does not allow sighting of the trampoline until just before landing.

Bottom - Bottom is when the bed comes to a sudden stop.

Build up - A build-up is a series of preliminary bounces to obtain height.

Cast - Cast is to lose one's alignment with the trampoline.

Center of gravity - The center of gravity is the point around which the weight is evenly balanced.

Crash dive - A crash dive is a layout front dive position with last second bend at hips to back landing.

Dismount - A dismount is the last skill in a routine or a manner in which one gets off of the trampoline.

Dorso-ventro axis - Dorso-ventro axis is the line through the abdomen from front to back on which the body rotates.

Double bounce - A double bounce is when one performer assists another by helping to depress the bed.

Drop - A drop is a landing or a distance between completion of a skill and the landing on the bed.

Execution - Execution is the performance of a skill or group of skills in terms of mechanical procedure.

Feel - To feel is a knowledge of the sensation associated with the execution and termination of a skill.

Foot thrust - Foot thrust is the pushing action of one's feet against the bed that gives his body desired rotation.

Form - Form is the appearance with which a performer executes a skill or routine.

Frame - Frame refers to the metal frame on which the trampoline bed is suspended.

Frame pad - Frame pad is the protective padding on the trampoline frame.

Free - Free denotes that the body position can be of one's choice (tuck, pike, layout, or pucked) and/or a combination of several.

Front drop - A front drop is a landing position on the stomach.

Full - A full is a back somersault with one twist.

Fundamental bounce - A fundamental bounce is starting from the feet, landing on the feet with no somersault action.

Gain - To gain is to travel forward on the trampoline bed during the execution of a skill.

Good feet - Good feet is to keep the feet together and pointed.

Hand belt - A hand belt is a safety belt held by hand with pieces of rope.

Hand spot - Hand spot is the assistance given by a spotter to the performer by use of the hands to insure safety.

Hands and knees drop - A hands and knees drop is landing on the hands and knees simultaneously.

Height - Height is the distance above the trampoline in which one performs.

Hot bed - A hot bed is a trampoline bed with extreme rebounding action.

In - In is the beginning part of a skill.

Jerk - A jerk is a sudden unnecessary movement by the performer during the performance of a skill or routine. Jerk is also a side pulling motion of a trampoline bed.

Kill - Kill is to stop bouncing by flexing the knees and absorbing the rebounding action of the trampoline bed.

Kip - A kip is a move from back drop position, the body is piked, and the legs and body are extended up in an arch and forward. The legs are then brought down as head and shoulders push the bed. Rotation is forward.

Knee drop - A knee drop is a landing position on the knees, shin and instep flat on bed with back straight and upright.

Landing - Landing is when performer makes contact with the trampoline.

Lateral axis - Lateral axis is a line through the hips (from side to side) on which the body rotates (somersault).

Layout - A layout is a stretched body position with no forward bend.

Lean - Lean is a term used to designate the position of the body in relation to a line perpendicular to the bed of the trampoline.

Lift - Lift, used as an adjective, describes the facility with which height can be attained on a given bed. This is proportioned to the weight of the bed plus the lack of air resistance of the bed. Lift, used as a verb, describes the action of attaining height.

Long - Long is when the body rotates too far around the lateral axis and landing is past the intended point of competition.

Longitudinal axis - Longitudinal axis is a line through the body (from head to foot) on which the body rotates or twists either left or right.

Lose - Lose is to travel backwards on the trampoline bed during the execution of a skill.

Loose bed - A loose bed is a trampoline bed that has a slow rebounding action.

Loose tuck - Loose tuck is the body position where the body is in intermediate position between tuck and pike.

Lost - Lost is losing one's awareness in relation to the trampoline while performing a skill.

Mini-tramp - A mini-tramp is a circular or square metal frame with a lightweight bed suspended by rubber or spring cables, i.e., miniature trampoline.

Mount - A mount is the first skill of a routine or the manner in which one gets on a trampoline.

Over - Over is when the body rotates too far around the lateral axis and landing is past the intended point of competition.

Pike - Pike is the body position bent at the waist with legs straight and hands grasping behind the legs in the area of the knees.

Pike jump - A pike jump is a free bounce with body bent at the hips, legs together, straight and parallel with the bed.

Pirouette - A pirouette is twisting while doing a free bounce.

Press - Press is to use steady force in pushing the legs and feet together.

Punch - Punch is to push the bed strenuously for maximum lift.

Radius of gyration - Radius of gyration is the distance between the center of rotation and the outer extremity.

Rebound tumbling - Rebound tumbling is the sport of performing skills on a trampoline.

Relocate - Relocate is the ability to find the trampoline, by sight, after having lost sight during the performance of a skill.

Ride the bed - Ride the bed means to be in rhythm with the movement of the trampoline bed.

Rotate - Rotate is revolving around an axis.

Routine - A routine is a prescribed number of skills which are done consecutively.

Safety belt - A safety belt is a belt designed to support the performer while he is learning skills which rotate around the lateral axis.

Salto - A salto is one complete body revolution around the lateral axis, front or back.

Seat drop - A seat drop is landing on the bed in a sitting position, legs straight, hands by the side.

Set - A set is a series of moves.

Shock cords - Shock cords are elastic cords used to suspend the bed on the frame of the trampoline which gives the rebounding action that lifts the performer.

Shoot - Shoot is an explosive extension of the legs from a tuck position to a pike or layout.

Short - Short is when the body does not rotate far enough around the lateral axis and the landing is less than the intended point of completion.

Slow bed - A slow bed is a trampoline bed that has a slow rebounding action.

Solid bed - A solid bed is a trampoline bed made from one piece of material.

Spot - Spot is to perform in one localized area of the bed, to focus the eyes on one particular object or to protect another performer.

Spotter - A spotter is a person who protects or spots the performer.

Spring - A spring is a coiled metal device used to suspend the bed on the frame of the trampoline which gives the rebound action that lifts the performer.

Squeeze - Squeeze is the term used to tuck or pike tightly.

Stomach drop - A stomach drop is landing on the stomach.

Straddle jump - A straddle jump is a free bounce with the body bent at the hips, legs straight, spread sidewards and parallel with the bed.

Stretch - Stretch is to extend the whole body in such a manner as to be rigid with toes pointed.

Swing or swingtime - Swing or swingtime is the action of doing one skill right after the other with no free bounce.

Swivel hips - Swivel hips consists of a seat drop, one half turn, and a seat drop.

Trampoline - A trampoline is a piece of apparatus consisting of rectangular fibrous woven mat suspended by springs or shock cords attached to a stationary rectangular base.

Tuck - Tuck is a body position with knees bent, hips flexed, and hands grasping legs below the knee.

Tuck jump - A tuck jump is a free jump with knees bent, hips flexed, and hands grasping legs below the knee.

Turn table - A turn table is one complete body revolution around the dorso-ventro axis in a prone position, left or right.

Twist - A twist is one complete body rotation around the longitudinal axis, left or right.

Web bed - A web bed consists of fibrous woven straps usually made of nylon which is suspended by springs or shock cords from the frame of the trampoline.

Whip back - A whip back is a fast low back somersault in a layout position.

Work in - Work in means to precede a skill with another skill with no free bounce between.

Work out - Work out is to follow a skill with another skill with no free bounce between skills.

APPENDIX B

Six selected examples of the fundamental skills of trampolining are:

Example A

1. Mount and dismount
2. Feet bounce
3. Seat drop
4. Swivel hips
5. Knee drop
6. Front drop
7. Back drop
8. Bent dive
9. Back turn over
10. Front dive
11. Cradle[1]

Example B

1. Mount and dismount
2. Bouncing correctly
3. The seat drop
4. The knee drop
5. The front drop

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[1]Dick Holzaepfel, "Elementary Trampoline Stunts," The Athletic Journal, XXXIII (October, 1952), 11.

6. The back drop[1]

Example C

1. Mounting and dismounting
2. Straight bouncing
3. Hands and knees bounce
4. Knees bounce
5. Seat drop
6. Front drop
7. Hands bounce[2]

Example D

1. Fundamental bounce
2. Kill the bounce
3. Change of direction (twist is to the left from the bed)
4. Change of direction (twist to the left while in the air)
5. Seat drop or seat bounce
6. Knee drop or knee bounce
7. Hands and knee drop or hands and knee bounce
8. Front drop or front bounce
9. Back drop or back bounce
10. Tuck jump

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[1]Frank LaDue and Jim Norman, Two Seconds of Freedom (Cedar Rapids, Iowa: Nissen Corporation, 1962), pp. 19-30.

[2]Larry Griswold and Glenn Wilson, Trampoline Tumbling Today (New York: A. S. Barnes Company, 1970), pp. 51-69.

11. Straddle jump
12. Swivel hips (twist is to the left)
13. Cradle
14. Swingtime and add-one[1]

Example E

1. Basic bouncing
2. Half pirouette bouncing
3. Full pirouette bouncing
4. Tuck bounce
5. Pike bounce
6. Seat drop
7. Front drop
8. Back drop
9. Knee drop
10. Half twist to back drop
11. Half twist to front drop[2]

Example F

1. Bouncing
2. Knee - break stop
3. Variety bounces (swan, tuck, pike, open pike, closed pike and straddle pike)

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[1]Jeff Hennessy, Trampolining (Dubuque, Iowa: Wm. C. Brown Company, 1968), pp. 13-28.

[2]Newton Loken and Robert Willoughby, Complete Book of Gymnastics (New Jersey: Prentice-Hall, Inc., 1959), pp. 63-66.

4. Sit - drop
5. Hands and knees drop
6. Knee drop
7. Straight - knee back drop
8. Front drop
9. Kick out back drop
10. Back pullover[1]

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[1]Chuck Keeney, Trampolining Illustrated (New York: The Ronald Press Company, 1961), pp. 7-30.

APPENDIX C

Major benefits the trampoline has to offer the students. The following are the major benefits the trampoline has to offer the students as listed by the physical education teachers reporting in the questionnaire.

1. Learn control of body.
2. A student can easily see his progress.
3. Preparation for diving - fun.
4. Good physical conditioning - legs and shoulders.
5. Development of kinesthetic sense and balance.
6. Diving skills practice.
7. Coordination skills.
8. It is a challenging and versatile piece of equipment.
9. Develops such skills as coordination, balance, flexibility and strength.
10. Good conditioner - helps coordination, balance.
11. Activity other than major sports.
12. Coordination.
13. Variation of activity.
14. Breath control.
15. Form.
16. Gain in self-confidence and self-control.
17. Poise and coordination.
18. New activity-adds zest to the physical education.
19. Improves balance, coordination.
20. A considerable amount of exercise in a short time.
21. The students have a great deal of interest in the activity.
22. High amount of exercise in small amount of time.
23. Develops sense of balance and body.
24. They enjoy it.
25. Enjoyment.
26. Challenge.
27. Carry-over for other activities.
28. Exercise for heavy girls that they can't get otherwise.
29. Aids in learning back handsprings.
30. Develops endurance and helps give confidence in achieving a skill.
31. Big girls who are afraid of other areas of gymnastics equipment and skills will jump on the trampoline.

32. Sense of accomplishment when one learns front or back flip.
33. Kids think it is great fun.
34. Improves general fitness - it is also fun.
35. Greatly improves relocation awareness.
36. Improves self-image - it is an activity almost all students can do.
37. Ability to handle one self in unusual position.
38. Chance to achieve or attempt to achieve various degrees of stunts.
39. Conditioning and fitness.
40. Girls experience body movement in different "medium" i.e., resilient mat-air.
41. Practice skills used in gymnastics.
42. Girls, poor in gymnastics, often experience success in trampoline work.
43. Fun.
44. Awareness of safety.
45. Confidence.
46. Coordination and agility.
47. A means to fitness: usage of muscles, etc.
48. Self-satisfaction: most can at least experience basic skills.
49. Analysis of skills: seem to pick up quickly how to help each other on basic skills.
50. Body control.
51. Conditioning.
52. Improves jumping ability.
53. Development of coordination.
54. New skills.
55. Diversion from normal physical education activities.
56. Confidence in skills and self.
57. Balance of individual.
58. Increases awareness of spacial relationships.
59. Chance for challenge - thrill.
60. Build-up for diving.
61. Rhythm and timing.
62. Increase in leg strength.
63. Improvement of body control.
64. Helps improve balance - kinesthetic awareness.
65. Aids in teaching diving.
66. Fun challenge to student.
67. Development of kinesthetic sense.
68. Social interaction (fair play and sharing).

APPENDIX D

LETTER OF TRANSMITTAL

Des Moines, Iowa

Dear Physical Education Teacher:

As a physical education teacher, I am doing a graduate research project as a partial requirement for the degree, Master of Science in Education at Drake University. The study will concern the various facets of trampolining in a physical education class.

To secure sufficient data, it is necessary to ask physical education teachers in the secondary schools in the State of Iowa with enrollment over 500 to complete the questionnaire. Neither the names of the instructors nor the names of the schools will be reported.

Would you comply by completing and returning the attached questionnaire, using the self-addressed, stamped envelope?

Please complete and return the questionnaire at your earliest convenience. Would you please make comments in the spaces provided following each question?

Thank you for your cooperation.

Yours truly,

Earle W. Duggan
Perkins School
4301 College
Des Moines, Iowa 50311

APPENDIX E

QUESTIONNAIRE

FACTORS AND CONDITIONS WHICH AFFECT THE ORGANIZATION AND SUPERVISION OF TRAMPOLINING IN THE PHYSICAL EDUCATION CLASS

1. What is your background in teaching trampolining? Please check each one used.

   a. past gymnastics performer _____
   b. gymnastics or trampoline course in college _____
   c. attendance at clinics _____
   d. self-taught _____
   e. other (explain) _____

2. How many years have you taught trampoline? _____

3. Was physical education your major area of professional preparation?

   yes_____ no_____

4. How many years has trampoline instruction been included in your present school program?

   a. 1 year _____
   b. 2-5 years _____
   c. 6-10 years _____
   d. other (explain) _____

5. How many days of trampolining were taught during the 1970-71 school year?

   a. 5 days _____
   b. 6-10 days _____
   c. 11-15 days _____
   d. other (explain) _____

6. How is trampolining presented?

   a. as one of several stations within a class period
   b. in conjunction with a unit on gymnastics ____
   c. as an individual activity ____
   d. other (explain) ____
      ____

7. When is trampolining presented?

   a. Fall ____
   b. Winter ____
   c. Spring ____

8. What is your method of grouping while participating on the trampoline?

   a. squad ____
   b. homogeneously by ability ____
   c. heterogeneously by ability ____
   d. other (explain) ____

9. Is the activity trampolining presented to the student on a coeducational basis?

   Yes____ No____

10. Do you use "spotters" while you have trampoline practice? Please check each one used.

    a. all sides of the trampoline ____
    b. end of the trampoline ____
    c. sides of the trampoline ____
    d. trampoline spotting tables ____
    e. none ____

11. Do you place mats on the gymnasium floor, surrounding the trampoline?

    yes____ no____

12. Do you allow more than one person on the trampoline simultaneously?

a. never ____
b. occasionally ____
c. often ____

13. Do you demonstrate the activity by: Please check each one used.

a. half-time performances at basketball games ____
b. P.T.A. demonstrations ____
c. assemblies ____
d. other (explain) ____

14. What training aids do you use for the more difficult skills? Please check each one used.

a. safety belt ____
b. hand spotting ____
c. overhead spotting rig ____
d. none ____
e. other (explain) ____

15. What visual aids are used? Please check each one used.

a. films ____
b. film strips ____
c. loop films ____
d. video tape ____
e. bulletin board charts ____
f. demonstrations ____
g. none ____
h. other (explain) ____

16. What kind of foot wear do the students use while performing on the trampoline? Please check each one used.

a. gym shoes ____
b. bare feet ____
c. socks ____
d. gymnastic footwear ____
e. other (explain) ____

17. How many trampolines does your school have available?

a. one ____
b. two ____
c. more than two (explain) ____

18. What is the size of the jumping surface of your trampoline?

a. 5 feet x 10 feet ____
b. 6 feet x 12 feet ____
c. 7 feet x 14 feet ____
d. other (explain) ____

19. What type of trampoline bed do you have?

a. 1 3/4 inch web ____
b. 1 inch web ____
c. 1/2 inch web ____
d. solid cotton canvas ____
e. perforated rubber ____
f. solid nylon ____

20. What type of suspension do you have?

a. rubber cables ____
b. springs ____
c. other (explain) ____

21. Does your trampoline have safety pads?

a. on the ends of the trampoline
b. around the entire frame of the trampoline ____
c. none ____
____

22. How do you store the trampoline when it is not in use?

a. folded and locked
b. folded ____
c. stored in athletic equipment room ____
d. left standing open ____
e. other (explain) ____
____

23. What method do you use to show the student's progression?

a. pre-post skill test
b. progressive skills recorded on charts ____
c. none ____
d. other (explain) ____
____

24. What kinds of games do you play on the trampoline?

a. follow the leader
b. add-on or tack-on ____
c. none ____
d. other (explain) ____
____

25. What type of injuries have you had on the trampoline during the 1970-71 school year?

Number of injuries

a. mat abrasion ____
b. sprain ____
c. strain ____
d. dislocation ____
e. fracture ____
f. paralysis ____
g. death ____
h. other (explain) ____

26. What was the <u>average</u> recovery period required before physical education was resumed, following an accident?

a. 1-7 days ____
b. 2 weeks ____
c. 3 weeks ____
d. 6 weeks ____
e. semester ____
f. other (explain) ____

27. Rank in order the most frequent reasons for your accidents. Example: If inadequate spotting has caused the most accidents, mark it 1. If faulty equipment has caused the 2nd most accidents, mark it 2, etc.

a. inadequate supervision ____
b. inadequate spotting ____
c. faulty equipment ____
d. attempting skills beyond the performer's capability ____
e. while executing a skill ____
f. other (explain) ____

28. If a skill was being executed at the time of injury, please give the number of injuries on each skill.

	Number
a. back drop	____
b. front drop	____
c. front somersault	____
d. back somersault	____
e. folding or moving equipment	____
f. acting as a spotter	____
g. other (explain)	____

29. How many students participated in your 1970-71 school year trampoline program?

a. 25-50 ____
b. 51-100 ____
c. 101-200 ____
d. other (explain) ____

30. What is the greatest number of students participating at one time?

a. 1-10 ____
b. 11-15 ____
c. 16-20 ____
d. other (explain) ____

31. What is your general opinion of a trampoline unit of study in physical education?

a. favorable ____
b. unfavorable ____
c. no opinion ____
d. other (explain) ____

32. Please name two or three major benefits the trampoline has to offer the students.

1. _____

2. _____

3. _____

If you desire a copy of the results of this study, please indicate by a check _____.

APPENDIX F

A questionnaire regarding the utilization of the trampoline in selected secondary schools of Iowa was sent to the physical education teachers of the following schools:

1. Bettendorf High School
2. Boone High School
3. Boone High School
4. Burlington High School
5. Carroll, Kuemper High School
6. Cedar Falls High School
7. Cedar Rapids, Kennedy High School
8. Cedar Rapids, Regis High School
9. Clinton High School
10. Council Bluffs, Lincoln High School
11. Davenport, Central High School
12. Davenport, West High School
13. Des Moines, East High School
14. Des Moines, East High School
15. Des Moines, Hoover High School
16. Des Moines, Hoover High School
17. Des Moines, North High School
18. Des Moines, North High School
19. Des Moines, North High School
20. Des Moines, St. Joseph's Academy
21. Des Moines, St. Joseph's Academy

22. Des Moines, Technical High School
23. Estherville High School
24. Harlan High School
25. Marshalltown High School
26. Ottumwa High School
27. Urbandale High School
28. Waterloo, West High School
29. West Des Moines, Valley High School
30. West Des Moines, Valley High School